



Development Of Integrated Business Excellence Model To Align With Digital Innovation For Indian Auto Component Industries At Chennai

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ABSTRACT

Business excellence models are widely used by the companies around the globe for business improvement. These models include Deming prize model, Malcolm Baldrige or American Model for Business Excellence and EFQM-model This paper presents an analysis of these existing models of Business excellence. Globalization and cutthroat competition have been pushing manufacturing companies to a corner nowadays, especially in turbulent and VUCA markets. Therefore, in today's era of high competitiveness there is a need of enhanced innovations and idea generations in an organization, also there is a strong need of increased customer and employee satisfaction, organizational growth and their products/services reliability and so there is a need of Business Excellence. After having assessed the various business excellence models being followed various companies across the globe, this paper aims to have better of the all world. Hence the integrated business excellence model is proposed and discussed at length in this paper

KEY WORDS: Business excellence, Deming prize model, Malcolm Baldrige model, EFQM-model,

1. Introduction

In today's increasingly competitive global market, a company's competitiveness relies heavily on its ability to manage processes and resources efficiently while working towards achieving its objectives. Initially, a company must conduct a thorough assessment of its current situation, pinpointing areas for necessary improvements. It is crucial to recognize that blindly copying the operational methods of successful companies does not guarantee success; in fact, it often leads to failure. Instead, companies in need of improvement must understand the operational methods of successful peers and tailor them to their own circumstances. The objective of this research was to explore the similarities and differences among these models by examining their focus on specific criteria within their frameworks. The study employed a theoretical approach and utilized comparative analysis as a tool to ascertain the emphasis placed by various Business Excellence models. One of the most effective strategies that has evolved over the years and successfully implemented by business organizations is Total Quality Management (TQM). TQM represents a systematic approach to management that aims to enhance customer value by designing and continuously improving organizational processes and systems. As the need for guidelines and standards for TQM implementation emerged, countries developed models for self-assessment and for identifying and addressing quality issues.

In the United States, the M. Baldrige National Quality Award (MBNQA) established in 1987 for this purpose. Its objectives include promoting awareness, recognizing achievements in US companies, and disseminating successful business strategies. In Europe, the EFQM Excellence Model stands out as one of the most widely utilized organizational frameworks for TQM. It is structured around nine criteria, with five categorized as "Enablers" and four as "Results." The "Enablers" criteria pertain to the actions taken by an organization, while the "Results" criteria focus on the outcomes achieved. The "Enablers influence the "Results"" and feedback from the "Results" aids in enhancing the "Enablers."

The Deming Total Quality Management (TQM) model, often referred to as the Deming Philosophy or the Deming System of Profound Knowledge, is a management approach developed by Dr. W. Edwards Deming, a renowned statistician, and quality management expert. Introduced in the 20th century, this model is rooted in the principles of continuous improvement, customer focus, and employee empowerment. It gained prominence following its successful implementation in Japanese industry, contributing significantly to the country's post-war economic resurgence. At its core, the Deming TQM model emphasizes the following key principles: Continuous Improvement (Kaizen), Customer Focus, Employee Involvement and Empowerment, Data-Driven Decision Making, Systems Thinking, Leadership Commitment. Overall, the Deming TQM model provides a comprehensive framework for organizations to achieve operational excellence and sustainable competitive advantage. By embracing its principles and practices, organizations can foster a culture of quality, innovation, and continuous improvement, ultimately driving long-term success and customer satisfaction.

On the other hand, the ISO / TC 176 SC-2 developed the ISO 9000 series of quality standards, serving as a model for quality assurance standards across various stages including design, development, production, installation, and service. It's crucial to utilize advanced information technology tools to enhance business excellence models in manufacturing. As far back as 1999, Frank Dewhurst et al.(1) concluded that advanced IT positively correlates with Total Quality Management (TQM), acting as an enabler for TQM practices.

Industry 4.0 emphasizes the seamless integration of people, machinery, and products in manufacturing. This concept incorporates the Internet of Things (IoT), Artificial Intelligence (AI), cloud computing, big data analytics, 3D printing, and advanced robotics, representing the future of quality management aligned with digital technologies. A 2019 study by Sami Sader et al.(2) suggests that Industry 4.0's implications can significantly enhance business excellence and TQM implementation. Adapting quality management to Industry 4.0 fosters an ecosystem seamlessly integrating technology, quality, and human resources in industrial settings. This integration improves communication, utilizes big data to meet customer requirements, and enhances customer satisfaction. Moreover, quality data and interconnected data-sharing systems anticipated to greatly affect QMSs by accelerating improvements and lowering the overall cost of quality.

The following papers can be referred with respect to Quality 4.0 i) Raoul Sisodia Daniel et. al.(3) *Quality 4.0 – How to Handle Quality in the Industry 4.0 Revolution*, Report No. E 2019:128, ii) Rajan Ranjith Kumar, L.S. Ganesh and Chandrasekharan Rajendran, (4) *Quality Paper Quality 4.0 – a review of and framework for quality management in the digital era*. Despite ample research on TQM and Industry 4.0, there is a lack of analysis on digital concepts relevant to TQM in practical terms and identifying potential challenges. Hence, further research in this domain is crucial to improve QMS performance in the digital era and address gaps in existing literature.

While this study aligns with previous research in its investigation of the variance in Total Quality Management (TQM) implementation among manufacturing firms, it extends its scope by additionally assessing the validation of the TQM construct and its correlation with quality performance. This includes examining both construct validity and criterion validity. Taking cue from Saumyaranjan Sahoo et.al (5) *Total Quality Management in Indian Manufacturing SMEs* this paper is planned for Auto manufacturing in Chennai

2. Review of literature

The Literature review done for various business excellence models starting from EFQM, MBNQA, Deming Award and Golden Peacock to name a few. Rateb Sweis, et. al, (6) *Reviewing the Literature on Total Quality Management and Organizational Performance* was taken good starting point reference

2.1 EFQM Model

The EFQM excellence model, previously known as the European Model for Business Excellence, introduced in 1991, with the European Quality Award first presented in 1992. This model, acknowledging various approaches to achieving sustainable excellence across all performance aspects, is based on the premise that excellent results in Performance, Customers, People, and Society stem from Leadership driving Policy and Strategy, People, Partnerships, Resources, and Processes.

Recognizing the significance of quality management in organizational performance, 14 major European companies formed EFQM in 1988. By 1991, EFQM developed the European Quality Award (EQA) program to honour outstanding European businesses, with criteria comprising enablers and results across leadership, people, strategy, partnerships and resources, processes, products and services (enablers), people results, customer results, society results, and key results (results). The EFQM excellence model serves as a powerful diagnostic tool, offering stakeholders the opportunity to identify strengths and improvement areas, providing a rational basis for assessing performance and progress towards explicit targets and objectives. N.M.Vaxevanidis et. al (7) in the paper *An overview and a comparison of ISO 9000:2000 quality system standards with related Automotive ones (QS9000, ISO/TS 16949) and TQM models (MBNQA and EFQM)* released in – Annals of the faculty of engineering hunedoara 2006

Andzela Veselova's (8) '*Comparative Analysis of business excellence models outlines that the EFQM model*' consists of two parts: Approach and Results, with criteria divided into 100 points each, except for "customer-related results" and "the main operational results," which are valued at 150 points out of 1000. Companies must collect 750–850 points to qualify for the EFQM business excellence model award, known as the Quality award, acknowledging the highest evaluation in Europe or worldwide for quality matters¹ EFQM Business excellence model Core values and concepts: Customer focus, Leadership, People development and involvement, Process approach, System approach to management, Continuous learning, Innovation and improvement, and partnership development.

2.2 MBNQA model

The establishment of the MBNQA in 1987 was a response to fierce competition from Japanese companies. Public Law 100-107, enacted on August 20, 1987, established the Baldrige Award criteria, drawing inspiration from the work of Malcolm Baldrige, who served as Secretary of Commerce from 1981 until his untimely death in 1987. The United States National Institute of Standards and Technology (NIST) oversees the award program and administers the criteria, which, as of 1999, encompass categories for education, healthcare, services, and non-profit organizations. The MBNQA criteria include leadership, strategic planning, student, stakeholder and market focus, measurement, analysis, and knowledge management, workforce focus, process management, and results. The measurement, analysis, and knowledge management criterion, as the fourth of seven criteria in the MBNQA model for performance excellence, serves as the backbone of the entire framework. According to Arif, this criterion is pivotal to the MBNQA model. Jack et al. (9) noted that "*the information systems criterion focuses on how the organization selects, manages, and utilizes information and data to support key company processes and improve company performance,*" underscoring its significance within the MBNQA framework.

The MBNQA is renowned for its holistic approach to organizational excellence, emphasizing a systems perspective and a commitment to continuous improvement. Organizations can utilize the MBNQA criteria for internal self-assessment or pursue the prestigious Baldrige Award, which recognizes exemplary performance in these areas. Moreover, the model's adaptability across various industries and sectors enhances its applicability and relevance.

Core values and concepts are embodied in seven categories:

- Leadership: How upper management leads the organization, and how the organization leads within the community.
- Strategic planning: How the organization establishes and plans to implement strategic directions.
- Customer and market focus: How the organization builds and maintains strong, lasting relationships with customers.
- Measurement, analysis, and knowledge management: How the organization uses data to support key processes and manage performance.
- Human resource focus: How the organization empowers and involves its workforce.
- Process management: How the organization designs, manages and improves key processes.
- Business/organizational performance results: How the organization performs in terms of customer satisfaction, finances, human resources, supplier and partner performance, operations, governance and social responsibility, and how the organization compares to its competitors

2.3 Deming TQM model

Application of the Deming's circle includes: - The collection and use of information for quality, analysis, introduction of the standardization, management processes, quality assurance, how the system applies in practice and the effects of the impact of TQC (Total Quality Control) upon the quality, service, delivery, costs, profits. The future - if there is a plan for achieving TQC program. These all could be referred in the paper by Sreeja et.al.,(10) on '*A Review on Business Excellence Models*'. The criteria for the Deming Prize focus on Total Quality Management (TQM) principles. Organizations aspiring to win the Deming Prize need to demonstrate excellence in these criteria, showcasing a commitment to continuous improvement and the principles of Total Quality Management throughout their operations. Core values and concepts: Customer focus, Leadership, Employee involvement, Process approach, Continuous improvement, Management by fact, Training and education and Transformation of Management style

2.4 Conceptual TQM Model with Lean, TPM, and SPC:

Ahmad, M.F et. al (12) in their paper titled '*Relationship of TQM and Business Performance with Mediators of SPC, Lean Production, and TPM*' highlight a robust correlation between TQM and business performance, as evidenced in prior research. The advantages of TQM include enhancements in quality, employee participation, teamwork, interpersonal relationships, customer satisfaction, employee satisfaction, productivity, communication, and market share (Besterfield, (13) 2009). Numerous earlier studies indicate a favorable association between TQM practices and business performance (Jun et al., (14) 2006; Bou & Beltrán, (15) 2007;

Gunday et al., (16) 2011; Miyagawa & Yoshida, (17) 2010). However, there are studies suggesting that TQM may not uniformly enhance business performance (Corredor & Goñi, (18) 2011; Demirbag et al., (19) 2006). Some findings also demonstrate partial correlations with business performance (Demirbag et al., 2006; Feng et al., (20) 2006; Arumugam et al., (21) 2008). Consequently, it is hypothesized that: H1: TQM practices have a direct, positive effect and lead to enhanced business performance.

This integrated model aims to create a synergistic approach where TQM principles drive the overall quality culture, Lean methodologies enhance efficiency, TPM ensures equipment reliability, and SPC provides the tools for continuous process improvement. Regular assessments and feedback loops are crucial to the success of this model, promoting ongoing learning and adaptation.

Assessment of all the Business Excellence Models

Upon analysis of the EFQM, MBNQA, and Deming models, it becomes evident that each of them offers a comprehensive approach to achieving business excellence. Delving into the EFQM model reveals a focus on both Enablers and Results, which serve as indicators of organizational strengths and weaknesses, respectively. Establishing the relationship between these Enablers and Results fosters a process-oriented approach. While the PDCA cycle is commonly practiced across all models, the EFQM and MBNQA approaches lack explicit mention of future planning and the measurement of past-year diagnoses. These business excellence models have remained relevant for many decades, undergoing regular updates. However, there is a growing need to integrate digital innovation with process management, emphasizing clear approaches and methods for implementation.

3. Objective

This study was conducted with following objectives.

- To identify the variables related to industrial requirements with respect to TQM
- To analyse the various existing business excellence models
- To identify the scope for improvement in the existing business excellence models
- To integrate various existing business excellence models with digital transformation
- To propose a suitable integrated model

4. Methodology

This study has been designed based on explorative research design. An exploratory research design is a methodology used to investigate a research problem to explore and gain insights into the same. It's particularly useful when the researcher aims to gain a deeper understanding of a topic, generate hypotheses, or identify potential variables for further investigation. Exploratory research designs are valuable for laying the groundwork for further research, providing insights into complex or understudied topics, and guiding the development of future investigation. In this viewpoint, this study has investigated the various existing business excellence models in order to understand the scope for improvement by integrating them. By integrating various existing business excellence models with the help of digital transformation and proposed a new integrated model for enhancing the organizational performance and other benefits.

5. Various models involved in this study

5.1 Quality Management System and major TQM models- A comparison

Quality management system got its genesis since 1987 based on BS5750: 1979 and the same is being followed across manufacturing and service industries. Till 2000 the standard was just a clause based document. Since 2000 it was redrafted by the ISO/ TC176 S/C -2 based on process approach with PDCA in mind. Subsequently for auto sector ISO / TS16949 standard was published in 2002 and revised in 2008. The current QMS for auto sector in addition to ISO 9001 : 2015 is the latest IATF 16949: 2016.

Comparing the major principles of various business excellence models with ISO 9001 (specifically IATF 16949:2016 for the automotive sector) reveals a significant alignment. The same is outlined by Luís Miguel Fonseca, (22) *'From Quality Gurus and TQM to ISO 9001:2015: A review of several Quality Paths'*. The latest version of ISO 9001 demonstrates a clear integration of principles and core values from diverse business excellence models. Strategic planning is notably emphasized, with a focus on understanding the organizational context, including both internal and external factors. Stakeholder engagement is prioritized at each stage, and a risk-based approach, in line with ISO 31000:2018 and IEC 31010:2019 standards, is adopted. Consequently, adherence to IATF standards in the automotive industry represents a streamlined version of broader business excellence models.

S.No.	QMS	TQM		
	IATF 16949 : 2016	Malcolm Balridge National Quality Awards	EFQM	JUSE TQM
1	Customer Focus	Leadership	Directions - Purpose , vision & strategy	Process thinking
2	Leadership	Strategy	Directions - Organisation culture & leadership	Customer Satisfaction
3	Engagement of people	Customer focus	Executions - Engaging Stake holders	Total Employee Involvement
4	Process Approach	Measurement analysis and Knowledge	Executions - Creating Sustainable value	Strategic thinking
5	Improvement	Workforce	Executions - Driving Performance and Transformations	Integrated systems
6	Evidence based decision making	Operation	Results- Strategic Operational performance	Decision based on facts
7	Relationship Management	Results	Results- Stake holder perceptions	Continual Improvement Projects
8				Effective Communications



Fig:1- EFQM Model

5.2 Business excellence model - EFQM

The strategic nature of the EFQM Model, combined with its focus on Operational Performance and a results orientation, makes it the ideal framework for testing the coherence and alignment of an organisation's ambitions for the future, referenced against its current ways of working and its responses to challenges and pain-points.

Utilizing the EFQM Model offers the chance to gain a comprehensive view, embracing a holistic perspective and recognizing that an organization is a complex yet organized system. Similar to the broader world, an organization should not be perceived as linear, mechanical, or predictable; instead, it is more accurately understood as a complex adaptive system comprised of interdependent individuals within a dynamic living environment. Any organization employing the EFQM Model:

- Acknowledges that it operates within a broader, intricate ecosystem where various entities, known and unknown, can either support or impede its progress. It comprehends the value of engaging with and maximizing opportunities to learn and grow from others within its ecosystem.
- Embraces the opportunity to serve as a leader in its sphere of influence, inspiring others and showcasing attainable successes for the benefit of both itself and others.
- Recognizes the inevitability of facing increasing rates and magnitudes of change and understands the necessity of anticipating, addressing, and responding effectively. It embraces the challenge of managing current affairs while simultaneously forecasting the future and ensuring preparedness.

The EFQM Model's structure revolves around the fundamental logic of three key questions:

- "Why" does the organization exist? What purpose does it serve? Why this particular strategy? (Direction).
- "How" does it plan to fulfill its purpose and strategy? (Execution).
- "What" has it achieved to date, and what are its goals for the future? (Results).

At the core of the EFQM Model's rationale, the "red thread" signifies the connection between an organization's purpose and strategy, illustrating how this connection aids in creating sustainable value for its most significant stakeholders and delivering outstanding results.

For an organization to achieve and sustain outstanding results surpassing stakeholder expectations, it must:

- Define an inspiring purpose and formulate an aspirational vision.
- Develop a strategy centered on creating sustainable value.
- Cultivate a winning culture.

This strategic direction positions the organization as a leader in its ecosystem, well-prepared to execute its plans for the future.

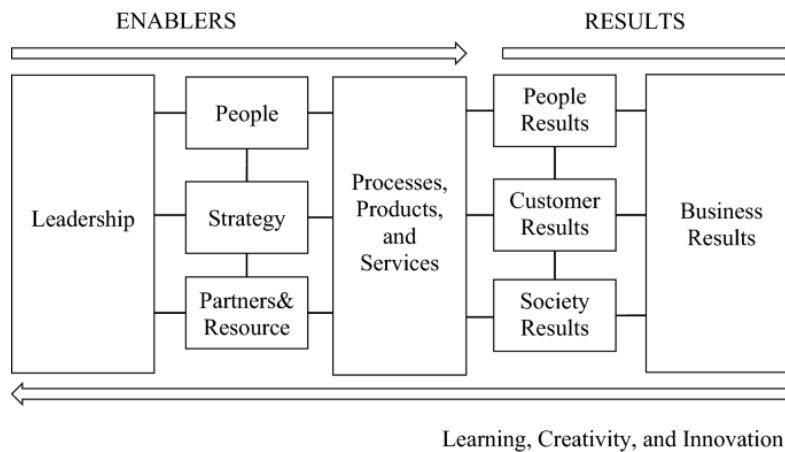


Fig:2- Structure of EFQM Model

Leadership: Emphasizes effective leadership that sets direction, inspires and facilitates organizational success.

Strategy: Focuses on the development and execution of a clear strategy aligned with organizational goals.

People: Highlights the importance of managing, developing, and engaging people to achieve organizational objectives.

Partnerships and Resources: Considers how an organization manages its external partnerships and utilizes resources efficiently.

Processes, Products, and Services: Evaluates the effectiveness of key processes, products, and services in meeting stakeholder needs.

Customer Results: Examines the outcomes related to customer satisfaction, loyalty, and other relevant measures.

People Results: Assesses the impact of people management on organizational performance, including employee satisfaction, development, and well-being.

Society Results: Considers the organization's impact on society, including its ethical behavior, social responsibility, and environmental sustainability.

Key Performance Results: Examines overall business performance, including financial and non-financial results.

Enablers: Factors that support the achievement of results, including leadership, policy and strategy, people, partnerships and resources, processes, products and services.

The EFQM Model has served as a guide for organizations, both within and beyond Europe, to foster a culture of improvement and innovation. Now, by incorporating current content, insightful data, a new language, and a fresh perspective on global megatrends and shifts, the EFQM Model presents a contemporary representation of excellence. In addressing the tangible challenges that modern organizations encounter, the EFQM Model provides data-driven, analysis-based tools. These tools offer organizations and individuals meaningful insights, data, and support while fostering a sense of inclusion, learning, and community within the EFQM network. Evolving from a straightforward assessment tool, the new EFQM Model, grounded in design thinking, has transformed into a crucial framework and methodology. It is designed to assist in navigating the constant changes, transformations, and disruptions that individuals and organizations confront daily.

In essence, the EFQM Model becomes instrumental in guiding your organization towards success. By assessing your position on the journey to creating sustainable value for key stakeholders, it not only helps identify gaps but also offers potential solutions. This empowerment enables progress and significant enhancements in your organization's performance.

Enablers

Leadership actively engages in formulating policies and publishing strategies based on comprehensive analyses of both internal and external environments. Additionally, leadership places significant value on the development of human resources and the enhancement of competencies. It is imperative for leadership to foster collaboration among supplier partners and allocate necessary resources to enable the organization to achieve its short-term and long-term goals effectively.

In strategizing, the organization must leverage available resources to focus on process improvements encompassing operations, design, and business functions. Continuous improvement is essential for attaining

and maintaining market leadership in technology, sustained market share, customer-centricity, and profitability, addressing identified and potential gaps proactively.

Results

To realize business objectives across key areas, critical success factors are identified. Establishing clear enablers and results, denoted as Xs and Ys, is crucial for ensuring guaranteed outcomes. Thus, emphasis is placed not only on achieving customer-centric results but also on outcomes oriented towards the well-being of people and society.

5.3 Business excellence model - MBNQA

In a bid to enhance the practices of quality management and bolster the competitiveness of American firms, President Ronald Reagan signed the Malcolm Baldrige National Quality Improvement Act on August 20, 1987. This initiative was established to foster quality awareness, outline the prerequisites for quality excellence, and disseminate information regarding successful quality strategies and their associated benefits. The National Institute of Standards and Technology (NIST) presently oversees the administration of the award, with the American Society for Quality contributing to the application review process, preparation of award documents, and related tasks. The MBNQA framework is structured around seven categories that offer strategic guidance for management: leadership, strategic planning, customer focus, measurement, analysis and knowledge management, workforce focus, process management, and results (Figure 2).

The Baldrige model has gained widespread popularity as a framework for organizational self-assessment. The NIST estimates that thousands of organizations have utilized its criteria for self-assessment, and there is evidence suggesting that MBNQA-winning organizations financially outperform their counterparts (Ruben et al., (24) 2007). Beyond being a set of criteria for award applicants, the MBNQA serves as a valuable guide for those seeking to implement proven performance excellence initiatives (Vokurka et al., (25) 2000). Numerous studies (Bemowski and Stratton, (26)1995; Black and Porter, (27) 1996; Reimann, (28) 1989; Vokurka, (29) 2001; Wu et al., (30) 1997) emphasize the frequent use of MBNQA for self-assessment. This process is crucial as it assists organizations in defining their quality systems and selecting customer-driven quality objectives (Reimann,(28) 1989).

A primary objective of the MBNQA is to provide a model that demonstrates an understanding and improvement of quality management by consistently refining the award criteria. The Baldrige model undergoes annual refinement, with major updates implemented every two years (Vokurka et al., (25) 2000). Prybutok and Cutshall (31) (2004) contend that the development of a generic instrument like the MBNQA for evaluating organizational performance is a useful tool for service and industry companies. In the current climate of shrinking budgets and flattened organizations, managers delegate decision-making authority, emphasizing the need for feedback to guide organizational development (Ettore, (32)1996; DeBaylo,(33) 1999).

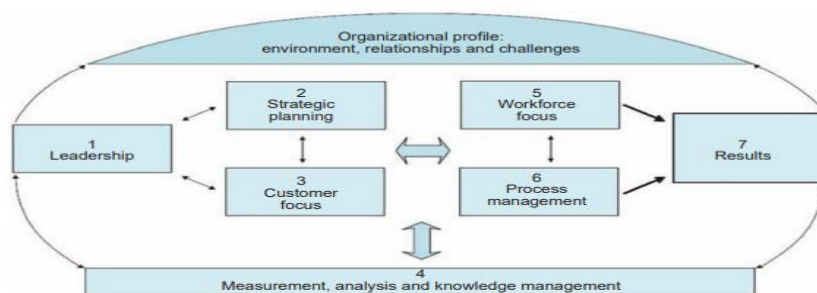


Fig:3- Malcolm Baldrige National Quality Award Model

Research indicates that national and international quality awards have been influenced by the MBNQA criteria (Prajogo, (34) 2005). The fundamental criteria in the MBNQA are deemed universal for helping organizations achieve quality business performance results, regardless of their type of operation or business (Schniederjans et al., (35) 2006). Stephens et al. (36) (2005) empirically demonstrate that the MBNQA criteria can enhance quality performance in small business operations, while Nielsen (37) (2005) and Williams (38) (2004) verify the applicability of MBNQA criteria as a blueprint for quality service in healthcare and various business sectors. Researchers like Bell and Elkins (39) (2004) suggest that the mere presence of MBNQA criteria in management systems can motivate, inspire, and transform organizational culture to improve quality performance. According to Saraph et al. (40) (1989) and Ahire et al. (41) (1996), the MBNQA criteria are critical success factors for a company's quality management system.

The key categories of the MBNQA criteria are as follows:

Leadership: Focuses on the role of senior leadership in establishing organizational vision, values, and performance expectations.

Strategic Planning: Emphasizes the creation and execution of a strategic plan aligned with organizational goals.

Customer Focus: Evaluates the organization's understanding of and engagement with customers to meet their needs and expectations effectively.

Measurement, Analysis, and Knowledge Management: Assesses the efficacy of data-driven decision-making, performance measurement, and knowledge management systems.

Workforce Focus: Considers how the organization engages, develops, and manages its workforce to achieve high levels of performance.

Operations Focus: Evaluates the efficiency and effectiveness of key business processes in delivering products and services.

Results:

Encompasses critical performance outcomes such as customer satisfaction, workforce engagement, financial and market results, and societal and organizational effectiveness.

- Most popular and influential model in the western world
- Launched by US government called the Malcolm Baldrige Award Model
- Commonly known as the Baldrige model, the Baldrige criteria, or The Criteria for Performance Excellence).
- More than 60 national and state/regional awards base their frameworks upon the Baldrige criteria.
- In the US nearly two million copies of the Malcolm Baldrige Model have been distributed since the award's launch in 1988.

The principles of the Malcolm Baldrige National Quality Award (MBNQA) are interconnected pillars that collectively support organizational excellence and sustainable success.



Fig:4- Integrated Baldrige excellence system

Leadership sets the tone by establishing a vision and fostering a culture of continuous improvement. Strategic planning translates this vision into actionable goals, guided by customer focus and a commitment to exceeding expectations. Measurement, analysis, and knowledge management provide the data-driven insights necessary for informed decision-making, while workforce focus ensures that employees are empowered to contribute their best efforts. Operations focus on optimizing processes to deliver high-quality products and services efficiently, leading to results orientation, where performance is measured against strategic objectives. This holistic approach fosters innovation, drives continuous improvement, and ultimately enhances organizational performance and competitiveness.

By embracing these principles and integrating them into their operations, organizations can cultivate a culture of excellence that not only meets but exceeds stakeholder expectations, positioning themselves for long-term success and sustainability in an ever-evolving marketplace.

5.4 Business excellence model – Deming prize criteria

In 1951, the Deming Quality Award was established in Japan, applying the concept of Total Quality Control (TQC). The Japanese model, while influential, lacks transparency on its own. The assessment checklist for applying the Japanese model for Deming's award includes determining corporate policy, evaluating work organization and administration, and implementing education and knowledge dissemination.

Comparing the core values of three Business Excellence Models reveals similarities, such as a clear vision for implementing business strategy, adherence to long-term and short-term success conditions, employee

involvement and training for improved results, and effective process management. However, the imperfections in the Deming Quality Prize's core values can be identified, suggesting a need for more specific criteria. For instance, the results of operational performance should encompass customer satisfaction, partnerships, teamwork, environmental commitment, and social responsibility. The author proposes breaking down these values into separate criteria, akin to EFQM and Baldrige models.

While acknowledging similarities between Baldrige and EFQM models, the author contends that EFQM's explicit definition of core values covers significant aspects of contemporary business practice, including processes, employee focus, customer orientation, value creation, and responsibility for a sustainable future. The concept of sustainability emerges as a unique core value in EFQM, emphasizing ethical action, corporate behaviour standards, and commitment to economic, social, and ecological sustainability. The emphasis on the sustainability should be a crucial criterion for any company striving for excellence and aiming for a Quality award, aligning with the principles of sustainable development that satisfy current needs without compromising future generations. Recognizing the broad concept of sustainability, the author asserts the importance of long-term solutions for environmental, economic, and societal balance.

The EFQM model provides comprehensive guidelines for companies aspiring to excellence, facilitating self-assessment, improvement planning, and gradual implementation of excellence principles. While the model does not prescribe specific measures, companies can choose actions based on their unique circumstances and capabilities. The Deming Quality Award, established by the Union of Japanese Scientists and Engineers in 1951, recognizes notable operational improvements achieved through Total Quality Management (TQM). As one of the world's earliest quality awards, it symbolizes continuous improvement and quality management development, relying on fixed principles and methods like process analysis, statistical techniques, and quality circles.

TQM is defined / revised during Oct 2009 by JUSE in 'The Application Guide for The Deming Prize , The Deming Grand Prize -2024' (42) is as follows.

'TQM is a set of systematic activities carried out by the entire organization to effectively and efficiently achieve the organization's objectives so as to provide products and services with a level of quality that satisfies customers, at the appropriate time and price'

The above can be explained as planned activities to achieve mission (objectives) with the top management's determination and leadership through mid and long term vision and strategies by involving everyone at all levels by employing rotating PDCA and appropriate management system with efficiency and effectiveness.

Scope of the business excellence refer to products and services to delivered customers with quality to satisfy all the stake holders with the optimal price and time .

The Deming prize / Deming grand prize is given to the applicant organisations that realize three means of TQM

- Clear Management policies that reflect its management philosophy , aggressive customer oriented business objectives and exhibits leadership in policy formulation
- Utilization of suitable TQM practices to realize the business objectives and strategies
- Achieve the business objectives and enhance organisational capabilities for future growth

Examination of Deming/ Deming grand prize will be carried through

a. Off site document review which includes General/ Corporate and Department DTQMP

b. Onsite examination

I. Schedule A – applicant's organisation (Important TQM presentation, Operational site view and review of materials)

II. Schedule B- Examiners' (Examination at operational sites) and iii) Executive session

Evaluation criteria during examination based on below

- Establishment of business objectives and strategies and role of top management's leadership in policy formulation
- Suitable utilization and implementation of TQM for the realization of business objective and strategies
- Effects obtained regarding business objectives and strategies through utilization and implementation of TQM
- Outstanding TQM activities and acquisition of organizational capabilities

Four evaluation angles for Schedule A and B

- Effectiveness – Achieving objectives through planned activities
- Consistency – Consistent throughout the organisation which includes vertical and horizontal consistency
- Continuity – From mid and long term view points
- Thoroughness – Thorough implementation – System thinking, Horizontal deployment

Three evaluation angles for outstanding activities using scale 1 to 5.

- Effectiveness : Actual organisation's activity that contributes for performance improvement and growth
- Reproducibility : Management method / system developed which can be deployed across to reproduce effects
- Innovativeness : Unique approaches suitable to unique challenges which can be benchmarked and can contribute to management development in the said field

Vehicles for TQM promotion

- Daily Management
- Cross – functional Management
- Policy Management
- Small group activities like QC Circle activity

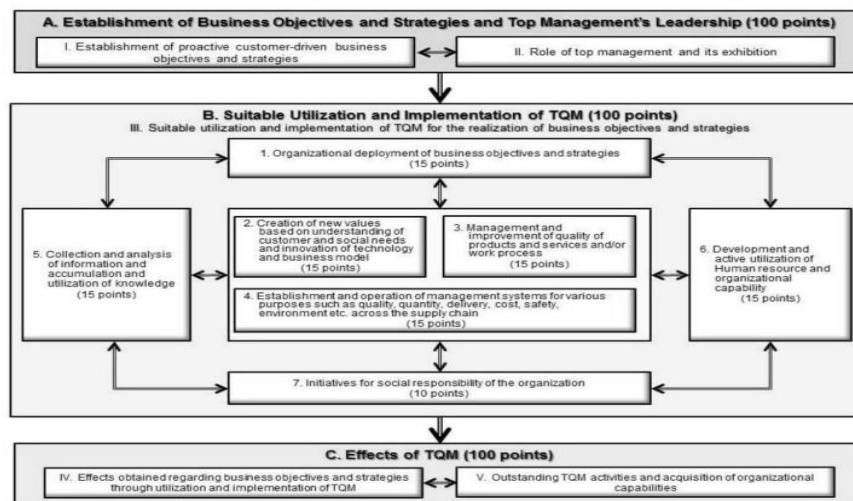


Fig 5 Criteria of Deming Prize excellence model

Daily Management and cross functional management supported by QC Circle activity can help run the organisation its routine business. Policy management can facilitate accomplishment of challenging goal or adaption to a changing business environment. Daily Management is a direct translation of Japanese words, “Nichijyo Kanri”. Daily Management comprises all routine activities that must be carried out efficiently while Maintenance activities are the main concern, Improvement activities are also part of Daily Management as per “Daily Management” (43) given by the terminologies committee of TQC Managers Course, JUSE , 1989. Further “Guidelines for Daily Management”(44) – JSQC- Std32-001(E):2014 explains that the Daily management can be said as all the activities to effectively achieve the objectives with regard to the job that every job unit of the organisation is charged with and core activities are Maintenance –plus-enhancement , Improvement and Innovation. SDCA helps in practising the Daily Management with the control point and control level

Expected results of Daily Management which some organisation call as “Daily Work Management” or “Daily Routine Management” or “Routine Management” as per Yukihiro Ando et.al (45) in his book “Daily Management The TQM Way”

- Consistent and better quality of products with reduction in defects
- Better understanding of process capability and process variability
- Embedding Improvement Culture (driving root cause analysis through use of PDCA)
- Role clarity and improved morale of work force
- Renewed focus on SOPs and standardisation
- Better understanding of cause –effect correlating processes with product / service.
- System and process approach to Management
- Factual approach to decision making
- Prevention by prediction

Policy Management is the direct translation of Japanese word, : Hoshin Kanri”. Policy Management is the activity to implement efforts effectively and efficiently with unity of purpose and priority approach with engagement of all functions and levels in an organisation according to “Guidelines for Policy Management” (46) -JSQC-Std 33-001(E) : 2017.Emphasizes the importance of cascading clear organizational objectives and policies. Policy and Daily Management are closely interrelated for Business Plan. The Policy management can be understood as an equivalent to X-Matrix and Balanced Score card. The three streams of Policy Management are Deployment, Integration and reacting to environmental changes. Elements that make up a policy are

Priority issue, Objective and means. Founding principles of Policy Management are Leadership, Priority approach, Total people involvement, process focus and fact based management. The process of Policy Management are

- Establishment of organisational policy
- Deployment of organisational policy
- Implementation of policies and its management
- Term end review

Deming Total Quality Management (TQM) principles serve as a comprehensive framework for achieving organizational excellence and continuous improvement. Customer focus is at the core, driving the understanding of customer needs and expectations throughout all processes. Leadership's commitment to quality and continuous improvement sets the tone for the organization, fostering a culture of excellence and accountability. Employee involvement and empowerment are central to TQM, as engaged employees contribute their creativity and expertise to problem-solving and process improvement initiatives. Continuous process improvement ensures that systems and processes evolve to meet changing customer needs and market dynamics. Data-driven decision-making, based on the systematic collection and analysis of performance metrics, enables organizations to identify opportunities for improvement and monitor progress towards strategic goals.

Supplier partnerships are valued as integral components of the quality management system, emphasizing collaboration and shared goals for mutual success.

The above could be referenced in '*An introduction to JUSE*' (47) and N.Haribabu's (48) '*Practitioner's guide on TQM*'. Overall, the Deming TQM principles provide a roadmap for organizations to deliver superior value to customers, enhance operational efficiency, and achieve sustainable competitive advantage in the marketplace. By embracing these principles and integrating them into their operations, organizations can drive excellence, innovation, and long-term success.

5.5 Conceptual TQM Model with Lean, TPM, and SPC:

The concept of Total Quality Management (TQM) has emerged in response to heightened global competition (Garvin, 1988). Firms engaged in international trade have prioritized TQM philosophy, procedures, tools, and techniques to excel in the competitive landscape (Garvin, (49) 1988). International competition demands elevated levels of quality to satisfy customer expectations (Garvin, 1988). TQM, as a management philosophy, has been instrumental in guiding organizations towards improved effectiveness and performance, striving for world-class status over the past two decades (Konecny & Thun, (50) 2011). While research has traditionally focused on TQM, Lean production, Total Productive Maintenance (TPM), and Statistical Process Control (SPC) individually, inquiries arise regarding their collective impact on business performance. TQM, Lean production, TPM, and SPC share common objectives: continual improvement, waste reduction, and enhanced performance (Teeravaraprug, Kitiwanwong, & Saetong, (51) 2011). These practices collectively constitute a comprehensive suite of manufacturing improvement methods aimed at enhancing business performance. Lean production targets waste reduction through efficient inventory management and minimizing process delays (Fullerton & Wempe, (52) 2009). TPM strives to optimize equipment performance and prevent breakdowns (Breja, Banwet, & Iyer, (53) 2011), while TQM endeavours to uphold and enhance product quality and overall business performance. Additionally, SPC serves as a monitoring mechanism to ensure process stability and control (Juran, (54) 1998).

Total Quality Management (TQM):

- a) Leadership and Culture: Establish a culture of continuous improvement and customer focus, with strong leadership commitment to quality.
- b) Customer Focus: Understand and meet customer needs, ensuring that quality is a primary driver in product or service development.

Lean Principles:

- a) Waste Reduction: Apply Lean principles to eliminate waste in processes, focusing on efficiency and value stream mapping to streamline operations.
- b) Continuous Improvement (Kaizen): Foster a culture of continuous improvement where employees at all levels are encouraged to identify and implement improvements.

Total Productive Maintenance (TPM):

- a) Equipment Reliability: Ensure equipment reliability and minimize downtime through proactive maintenance practices.
- b) Employee Involvement: Engage employees in equipment maintenance and care to create a sense of ownership and responsibility.

Statistical Process Control (SPC):

- Process Monitoring: Implement statistical techniques to monitor and control key processes, ensuring that variations are identified and addressed.
- Data-Driven Decision Making: Use SPC data to make informed decisions and continuously improve processes.

Integration and Synergy:

- Cross-Functional Teams: Encourage collaboration among departments and functions to break down silos and improve overall process effectiveness.
- Training and Development: Invest in training programs to equip employees with the skills needed to implement TQM, Lean, TPM, and SPC principles.

Performance Metrics:

- Key Performance Indicators (KPIs): Define and track KPIs aligned with TQM principles, Lean goals, TPM objectives, and SPC requirements.
- Balanced Scorecard: Implement a balanced scorecard approach to ensure a holistic view of organizational performance.

5.7 Integration of EFQM Excellence model and information systems Criterion

Rosli Ismal et. al (55) in the paper “Integration of EFQM Excellence model and Information Systems criterion” in the Journal of Theoretical and Applied information technology has improvised the EFQM Model, based on which our current model is postulated

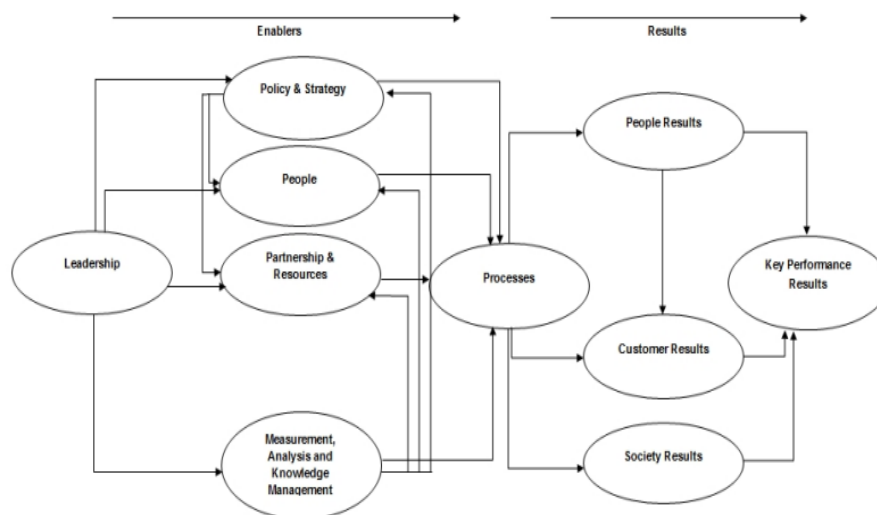


Fig:6- Proposed conceptual model of EFQM Excellence model and information systems Criterion by Rosli Ismal et. al

6. Proposed new model

Based on the observations of above models, a new integrated business excellence model with lean six sigma and digital transformation is proposed by identifying relationship between various links and same is given below.

Rotating PDCA for policy management in the order of priority issue, objective and means is considered in line with Deming prize model and with stress on deployment, integration and reaction to environmental changes. Daily management interrelated with Policy management comprise business plans. Thrust for both PDCA for Policy management and SDCA for Daily management is postulated. Risk based thinking in line with the ISO 31000 and need to contribute for society is given priority in the proposed model

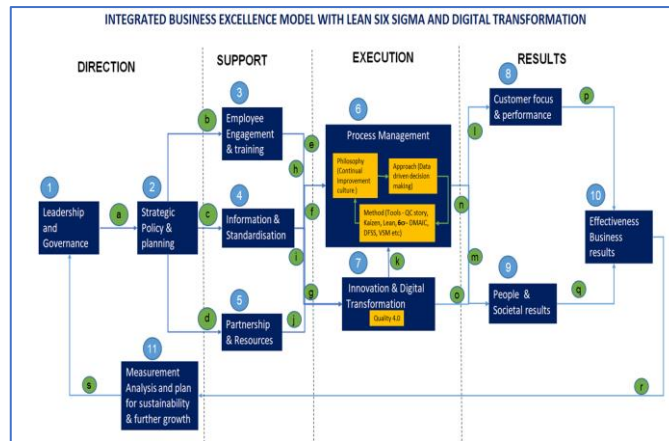


Fig:7- Integrated business excellence model with Lean six sigma and digital transformation

6.1 Link between Leadership & Governance and Strategic Policy & planning

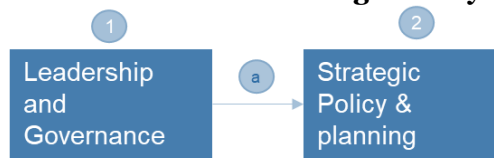


Fig:8- Linkage between Leadership & Governance and Strategic Policy & planning

1) Leadership & Governance

- Organizational performance review
- Societal responsibility
- Succession – Development
- Organizational stability
- Communication – Engagement
- Leadership Process
- Governance – Ethics
- Strategic Alignment
- Organizational Culture
- Resource Allocation: Innovation and Adaptability

2) Strategic Policy & planning

- Strategy Development process
- Action Plan Development
- Action Plan Deployment
- Strategic Sourcing
- Risk Assessment
- Strategic Assessment
- Strategic Resource Commitment
- Resource Allocation – Redirection

Strategic management and leadership provide an organization with competitive edge, and both the concepts are interlinked. Moreover, strategic management contributes towards developing a sustainable business that helps organizations to survive even during economic recessions. The influence of a leader affects the organizational strategic management, and besides, it affects the strategic decisions.

6.2 Link between Strategic planning and People and partnership exists in EFQM, in our proposal strategy is linked with also information & standardization taking cue from Juse’s Deming award

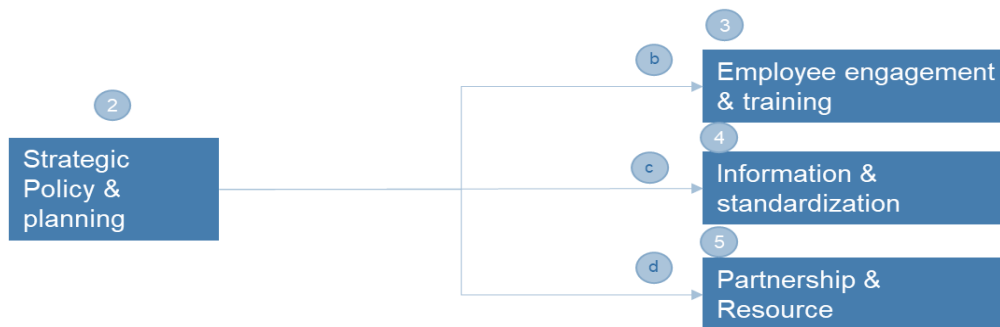


Fig:9- Link strategic policy & planning and Employee engagement & training, Information & standardization, Partnership & Resource

- 3) Employee engagement & training
 - Employee - engagement assessment, capability-capacity, climate improvement & performance management
 - Recruit, Hire, Place & Retain
 - Career Progression Learning & Development
- 4) Information & standardization
 - Data Collection and Analysis
 - Business Intelligence (BI)
 - Knowledge Management
 - Process Standardization:
 - Quality Standards
 - Performance Metrics
- 5) Partnership & Resource
 - Collaborative Innovation
 - Access to Expertise
 - Market Expansion
 - Optimizing Human Resources
 - Financial Resource Allocation
 - Technology and Infrastructure
 - Supply Chain Optimization

- ❖ By aligning Strategic policy and planning, as well as employee engagement and training, organizations can create a cohesive approach that integrates long-term vision with the development and motivation of their workforce, ultimately leading to sustained success and excellence
- ❖ Strategic policy and planning, as well as information and standardization, are both essential components of business excellence. They contribute in distinct ways to the overall success and sustainability of an organization.
- ❖ Strategic policy and planning, as well as partnerships and resource management, are integral components of business excellence. Both play critical roles in shaping the direction, capabilities, and overall success of an organization. A strategic vision guides the organization, while partnerships provide additional resources, innovation opportunities, and market access. The successful integration of these elements ensures that the organization is well-positioned to navigate challenges and pursue excellence in a dynamic business environment.

6.3 Link between People, Partnership & resources with Process Management, innovation and digital transformation is proposed in line with Quality 4.0 exists in EFQM. In our proposal information & standardization also linked with Process Management, innovation and digital transformation is proposed in line with Quality 4.0

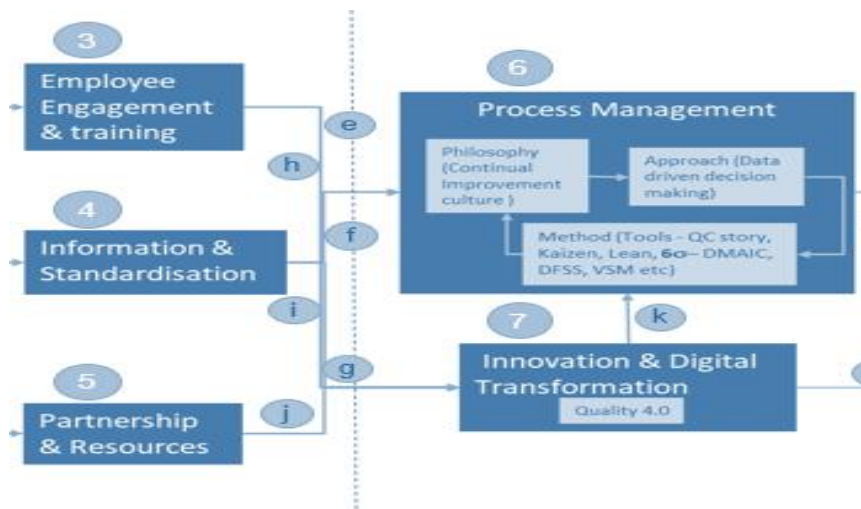


Fig:10- Link Employee engagement & training, Information & standardization, Partnership & Resource and Process management, Innovation & Digital transformation

- 6) Process Management
 - Process improvement-innovation
 - Process Control-Sustainability
 - Acceptance-Implementation
 - Process and system Design
 - Work process Determination
 - Supplier & Partner Integration
- 7) Innovation & digital transformation
 - Product and Service Improvement - Continuous Enhancement
 - Process Innovation - Efficiency and Optimization
 - Market Differentiation - Competitive Advantage
 - Customer-Centric Innovations - Meeting Customer Expectations
 - Technology Adoption: Integration of Advanced Technologies
 - Data-Driven Decision-Making: Insights from Data Analytics

- Agile Operations: Flexibility and Adaptability
- Enhanced Customer Experience: Digital Interaction and Personalization

- ❖ Achieving business excellence involves a harmonious integration of employee engagement and training with effective process management. A workforce that is both engaged and well-trained, operating within streamlined and continuously improved processes, creates a foundation for sustained success and excellence in a competitive business environment.
- ❖ Information and standardization, along with process management, are interconnected elements that contribute significantly to achieving business excellence. Well-managed information, when combined with standardized and optimized processes, creates a foundation for continuous improvement, quality assurance, and informed decision-making, all essential components of business excellence.
- ❖ Business excellence is achieved through a holistic approach that integrates partnership and resource management with effective process management. Well-managed partnerships, when combined with optimized and standardized processes, create a foundation for continuous improvement, risk mitigation, and a resilient organizational structure, all of which are crucial elements of business excellence

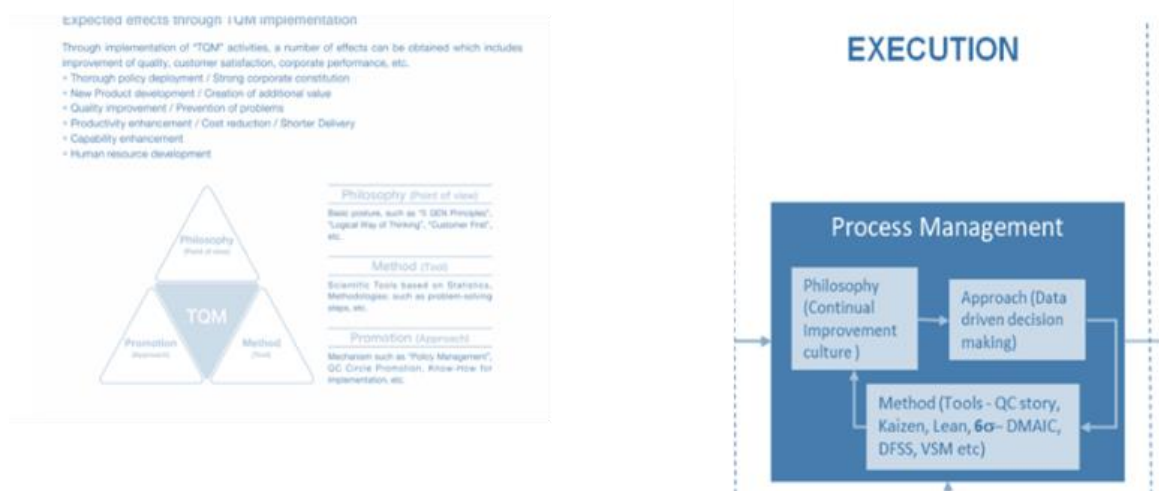


Fig:11- Effects of TQM implementation and execution of Process management

Within Process Management Continual Improvement is referred to as Philosophy, data driven decision making as Approach and Various statistical tools for problem resolution as Method. Here DMAIC, DFSS, VSM are integrated

- ❖ Employee engagement and training, along with innovation and digital transformation, are complementary factors that contribute significantly to business excellence. the integration of employee engagement and training with innovation and digital transformation is vital for achieving business excellence. An engaged and well-trained workforce, equipped with digital skills, fosters a culture of innovation and adaptability, positioning the organization to thrive in a dynamic business environment
- ❖ An organization that leverages data, adheres to standards, embraces innovation, and strategically adopts digital technologies is better positioned to thrive in a dynamic and competitive business environment. The key is to create a synergistic relationship between these components, fostering a culture of adaptability, continuous improvement, and strategic alignment.
- ❖ Achieving business excellence involves a harmonious integration of partnership and resource management with innovation and digital transformation. Organizations that strategically align these components, fostering a culture of collaboration, adaptability, and continuous improvement, are better positioned to thrive in a dynamic and competitive business environment.



Fig:12- Link between Process management and Innovation & digital transformation

6.4 Process Management and innovation & digital transformation compliments each other

❖ A balanced and integrated approach that incorporates process management with innovation and digital transformation. An organization that leverages efficient processes, embraces innovation, and strategically adopts digital technologies is better positioned to thrive in a dynamic and competitive business environment. The key is to create a synergistic relationship between these components, fostering a culture of adaptability, continuous improvement, and strategic alignment.

6.5 In Result phase, performance of the execution phase is measured from Customer and People perspective. This link exists in EFQM and The linkage between innovation & digital transformation and results from Customer and People perspective is proposed

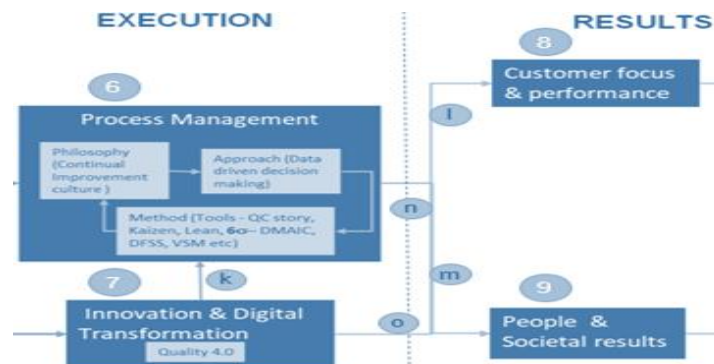


Fig:13- Link with Process management and Innovation & digital transformation and customer focus, performance, People & Societal results

8) Customer focus & performance

- Understanding Customer Needs: Market Research
- Customer-Centric Culture: Employee Engagement
- Feedback Mechanisms: Customer Feedback
- Quality of Products and Services: Meeting Expectations
- Strategic Planning: Alignment with Objectives
- Employee Performance: Training and Development
- Balanced Scorecard Approach: Holistic Measurement

9) People & Societal results

- Employee Satisfaction and Engagement: Measurement and Improvement
- Training and Development: Continuous Learning:
- Workplace Well-being: Health and Wellness Programs:
- Diversity and Inclusion: Creating Inclusive Workplaces
- Community Engagement: Corporate Social Responsibility (CSR)
- Ethical Practices: Integrity and Ethics
- Customer and Stakeholder Satisfaction: Building Trust
- Environmental Sustainability: Environmental Stewardship
- Innovation and Research: Contributions to Advancements

❖ Process management, customer focus, and performance are closely interconnected within the framework of business excellence. By aligning processes with customer needs, continuously improving performance, and

fostering a customer-centric culture, organizations can enhance their overall competitiveness and success in the marketplace. The synergy of these components contributes to sustained business excellence.

- ❖ Process management, people results, and societal results are interconnected dimensions within the framework of business excellence. Organizations that effectively integrate these elements create a holistic approach to achieving excellence, fostering positive outcomes for employees, stakeholders, and society at large. The synergy of these components contributes to sustained business excellence and responsible organizational practices.
- ❖ The seamless integration of innovation, digital transformation, customer focus, and performance. Organizations that strategically align these components, leverage digital technologies for innovation, and prioritize customer satisfaction are better positioned to thrive in a competitive business environment. The key is to create a synergistic relationship between these elements, fostering a culture of adaptability, continuous improvement, and strategic alignment.
- ❖ Organizations that strategically align of innovation, digital transformation, people results, and societal results, leverage digital technologies for innovation, prioritize employee well-being, and contribute positively to society are better positioned to thrive in a dynamic and competitive business environment. The key is to create a synergistic relationship between these elements, fostering a culture of adaptability, continuous improvement, and responsible organizational practices.

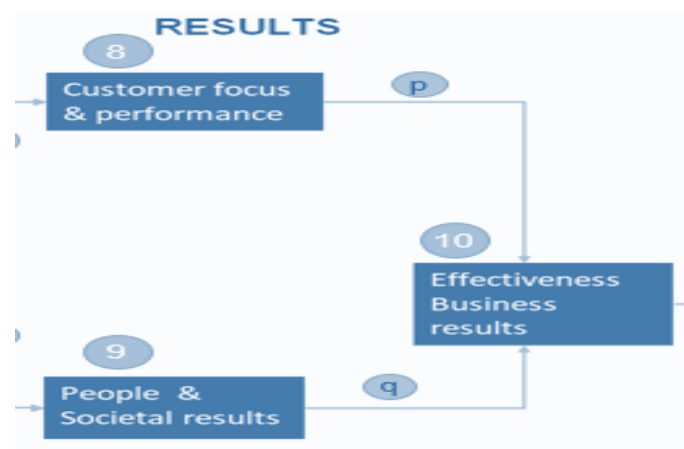


Fig:14- Link with customer focus, performance, People & Societal results and Effectiveness business results

6.6 Business results measures the effectiveness of customer focus / performance and People & Societal results. This link exists in EFQM

10) Effectiveness Business results

- Achievement of Objectives: Strategic Alignment
- Customer Satisfaction: Meeting Customer Expectations
- Financial Performance: Profitability and Financial Health
- Operational Efficiency: Optimized Processes
- Employee Engagement and Productivity: Positive Workforce Contributions
- Performance Metrics and KPIs: Measurement and Monitoring
- Operational Excellence: Process Optimization

- ❖ Customer focus, performance, people & societal results, and effectiveness in business results are interlinked dimensions that collectively contribute to business excellence. Organizations that strategically align these components, foster a culture of continuous improvement, and prioritize social responsibility are better positioned to achieve sustained success and effectiveness in their business outcomes. The integration of these elements reflects a holistic approach to business excellence, where organizational success is not only measured financially but also in terms of customer satisfaction, employee engagement, societal impact, and overall effectiveness

6.7 Measurement analysis from MBNQA and PDCA approach from Deming prize is taken. Link proposed for Measurement analysis (Past year performance diagnosis) reviewed & proposed it to be in tandem with future plan .Additionally, ESG can be interlinked

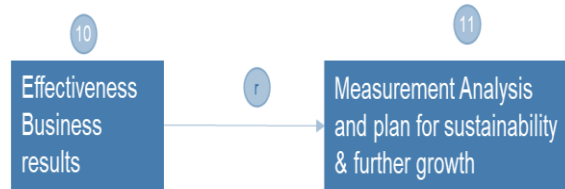


Fig:15- Link with Effectiveness business results and measurement analysis and plan for sustainability & further growth

11) Measurement Analysis and plan for sustainability & further growth

- Define Key Performance Indicators (KPIs)
 - Establish Baselines and Targets:
 - Implement Data Collection and Analysis
 - Continuous Improvement
 - Performance Reviews and Reporting
 - Sustainability & Growth Planning
 - Strategic Alignment and Leadership Commitment
- ❖ Previous year results on both managing and check points will be assessed using a four student model to understand what went right and wrong . Strategic actions will be planned for all the major strategic goals with improved and corrected priority measures and well connected means
 - ❖ Implementing a robust measurement, analysis, and planning process is critical for sustainability and further growth within the business excellence model. By integrating a comprehensive measurement, analysis, and planning strategy, organizations can not only sustain their business excellence but also foster continued growth and adaptability in a dynamic business environment. Regular reviews and continuous improvement efforts are essential for staying aligned with business excellence principles and achieving long-term success.

7. Proposed tools for business excellence implementation

7C MODEL Tools- Strategy for Enhancing Competitiveness and implementation of Business Excellence

Based on the book Nine pearls of TQM by Dr. Swaminathan (56) where the 7C model tool for enhancing competitiveness and implementation of TQM, tools that were explained in detail where Consolidate , Converge, Conceive , Communicate, Convert , Collaborate and Challenge . The 7C tools were mapped against the Stage, Structure, Customer focus, Culture, System, Process and CSR & EHS. On-going through the tools the comprehensive nature in which it is postulated well understood. However, 2 more relevant tools added keeping in line with commitment culture and continual improvement journey the organisation need to embark on. The revised 9C tools for business excellence implementation are given as

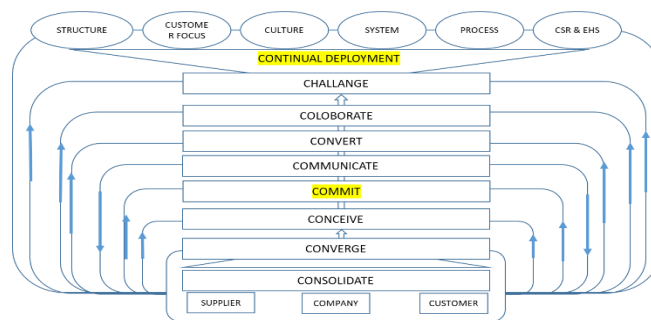


Fig:16- 9C Model

S.No	Stage	Structure	Customer focus	Culture	System	Process	CSR &EHS
1	Consolidate	Present Layout/ Reporting Structure	Decision-making that aligns with customer expectations. Porters 5 forces	Geo-historical alignment with Organization Culture	Availability of IMS/QA Diagram	Product or Process Type	Checklist for Conformity Initiative
2	Converge	Collate the three status	Align & harmonize diverse organization	Identify Cultural Unity	Check for system mismatch	What is best suited for all the three	Is there Congruence in action by all

			al efforts, to meet customer needs.				
3	Conceive	New layout/ Role Clarity	Generate innovative ideas and solutions that resonate with customer expectations	Develop a STD Uniform code	Iron out differences	Create a Value Chain	Evolve idea for Environment Sustainability
4	Commit	Organizational structure aligns with the business strategy and facilitates effective operations	Demonstrate leadership commitment for customer-centric culture that permeates all levels of the organization	Cultivate a culture that values collaboration, innovation, inclusivity, and CI	Organization's systems are aligned with its goals, efficient, and capable of supporting growth and innovation	Processes are well-defined, regularly reviewed, and optimized for effectiveness and efficiency	Ethical business practices, social responsibility, environmental sustainability, and employee health and safety
5	Communicate	Deploy communicative media/VCS	Key account managers or SPOC	Language and style	Propagate the oneness	Bind the flow with one voice	Concede ISO 26000/14001/45001
6	Convert	Re-layout/ Redefined Roles	Convert customer insights and feedback into actionable strategies and improvements	Calibrate approaches	Obtain feedback	Deploy lean tools	Go Green
7	Collaborate	BPR/IPR	Customer centric task forces	QC Teams	IMS/QA Diagram	SCM/B2B & B2C	Charity, sponsorships philanthropy
8	Challenge	Simplified Structure/Flat Organization	Improved RFQ hit ratio and convergence ratio	Unity in Diversity with one Goal	Data migration/Data Hi-jacking	Transaction & Engineering Processes	Triple Bottom Line (TBL)
9	Continual Deployment	Dash board system linked balanced score card	Usage of 4 student model for improvement	Lean Six sigma, QC story approach for all issues	Daily Work Management and Policy Deployment	SOP reviews and monitoring	ESG and Business Responsibility & Sustainability Reporting

Table:2- 9C tools were mapped against the Stage, Structure, Customer focus, Culture, System, Process and CSR & EHS

8. Managerial implications

The outcomes of implementing an integrated business excellence model that encompasses the principles of EFQM, MBNQA, and Deming TQM are multifaceted and impactful:

Enhanced Organizational Performance: The proposed model will help, organization to achieve enhanced performance across all aspects of their operations. This will include improvements in leadership effectiveness, strategic planning, customer satisfaction, employee engagement, process efficiency, and overall business results. This will result in comprehensive performance assessment

Holistic Approach to Excellence: The new model will encourage a holistic approach to excellence, emphasizing the interconnectedness of various organizational functions and processes. This comprehensive perspective enables organizations to address challenges and opportunities in a more systematic and effective manner.

Continuous Improvement Culture: Drawing from the PDCA cycle of the Deming TQM model, the new model / framework fosters a culture of continuous improvement. Organizations are encouraged to regularly

assess their performance, identify areas for enhancement, implement changes, and monitor results, leading to ongoing refinement and optimization of processes and practices.

Stakeholder Satisfaction and Trust: By prioritizing customer focus and engagement, organizations can improve customer satisfaction, loyalty, and trust. Similarly, by investing in employee development and empowerment, organizations can enhance employee satisfaction, morale, and commitment. These positive relationships with stakeholders contribute to long-term success and sustainability.

Innovation and Adaptability: The new model will promote innovation and adaptability by encouraging organizations to embrace new ideas, technologies, and approaches to problem-solving. By leveraging the creativity and expertise of employees and stakeholders, organizations can drive innovation, seize new opportunities, and stay ahead of competitors in a rapidly changing business environment.

Risk Management and Resilience: Through the integration of quality management principles, organizations can better identify, assess, and mitigate risks. By proactively managing risks and uncertainties, organizations can enhance their resilience to external threats and disruptions, ensuring continuity of operations and safeguarding against adverse impacts.

Overall, the outcomes of an integrated business excellence model encompassing EFQM, MBNQA, and Deming TQM are aligned with the overarching goal of achieving organizational excellence, sustainability, and long-term success. Effects on the business was studied based on Juozas Ruzevicius et. al., (57) '*Quality Models and Systems and their influence to the Business*'

9. Conclusion

The current study has successfully expanded the EFQM, MBNQA, and Deming excellence models by integrating the EFQM model with the measurement criteria of the MBNQA model and incorporating the PDCA approach from the Deming model. These integrated business excellence models offer comprehensive frameworks for organizations aiming for excellence and enduring success.

The proposed model underscores a holistic approach to organizational management, addressing leadership, strategy, customer focus, employee engagement, process improvement, and results orientation. By amalgamating diverse principles and criteria, the new model provides a structured framework for organizations to evaluate their performance, pinpoint areas for enhancement, and propel continuous progress. Moreover, the integrated models foster a culture of excellence and innovation, encouraging organizations to embrace best practices, leverage data-driven insights, and nurture collaboration both internally and externally. In addition to the new proposed model, improvised tools with 9C approach for strategic implementation of Business excellence also is proposed

Though this proposed new model is expected to offer various benefits, it is mandatory to declare that whether this model is valid one or not. Hence further research is warranted to validate this model and to examine the impact of digital innovation on the EFQM excellence model and measurement criteria, as well as the iterative PDCA approach in the manufacturing sector. This suggests the potential integration of other management frameworks, such as the Balanced Scorecard, with the proposed model to enhance organizational performance and adaptability in the digital age. Because of these reasons, this explorative research can be extended in to descriptive research as next level of stepping stone for providing ultimate concluding remarks on the proposed model.

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